Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte OSAMU SHIMIZU and KANJI NAKANISHI

Appeal No. 1998-0542
Application No. 08/479,843

HEARD: February 22, 2001

Before, OWENS, KRATZ, and JEFFREY T. SMITH, Administrative Patent Judges.

KRATZ, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-6 and 11-19, which are all of the claims pending in this application.

BACKGROUND

Appellants' invention relates to a single layer soft magnetic thin film made of a specified composition and so as to possess particular magnetic properties including a coercivity not exceeding 2.5 Oe. Appellants allege that the

film is useful as a magnetic head core material (specification, page 2). Claim 1 is reproduced below.

> A soft magnetic thin film consisting essentially of a single layer of a $Fe_aB_bN_c$ composition, wherein a, b and c each denote atomic percent, provided that a + b + c = 100, and B denotes at least one of Co, Ni and Ru, and wherein the compositional range is given by
> 0 — b # 5, and
> 0 — c — 5,
> wherein said composition is substantially uniform along the thickness of the film, and wherein said magnetic film has a coercivity not exceeding 2.5 Oe and a saturation magnetic flux density B_{25} of at least 16 kg measured at a magnetic field of 25 Oe.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Otomo et al. (Otomo) 4,772,976 Sep. 20, 1988

Kobayashi et al. (Kobayashi) 4,935,314 Jun. 19, 1990

Claims 1-6 and 11-19 stand rejected under 35 U.S.C. § 103 as being unpatentable over Kobayashi and optionally Otomo.

OPINION

Upon careful consideration of the opposing arguments presented by appellants and the examiner, we find that the

aforementioned § 103 rejection is not well founded. Accordingly, we will not sustain the examiner's rejection.

As evident by a review of claim 1[1], all of the claims on appeal require a soft magnetic film consisting essentially of a single layer made of iron (Fe) nitrogen (N) and at least one of cobalt (Co), nickel (Ni) and ruthenium (Ru) wherein the range of nitrogen in the composition of the film is above 0 atomic percent but less than or equal to 5 atomic percent, the range of the total of at least one of cobalt, nickel and ruthenium is above 0 atomic percent but less than or equal to 5 atomic percent and the balance of the composition is iron. Additionally, the film of claim 1 is made[2] so as to include: (1) a substantially uniform composition throughout the thickness thereof, (2) a coercivity of 2.5 Oe or less, and (3) a saturation magnetic flux density B_{25} of at least 16 KG when measured at a magnetic field of 25 Oe.

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[1] We shall limit our discussion to claim 1, which is the sole independent claim on appeal.

[2] Appellants describe the method of making their film at pages 5-8 of the specification.

We reproduce the examiner's statement of the rejection (answer, pages 3 and 4):

> Claims 1-6, 11-19 stand rejected under 35 U.S.C. [sic: §] 103(a) as being unpatentable over Kobayashi '314 and optionally Otomo '976.
>
> The applied Kobayashi 4,935,314 teaches one of ordinary skill in the art to form a soft magnetic thin film of iron containing nitrogen in an amount of 1 to 15 at %, preferably 5 at %, and ruthenium in an amount of .5 to 5 at %. See all the examples in the Tables, particularly Table 3 showing Fe- % at % N-1.5 at % Ru exhibiting a Bs of 19.6 [KG] and a coercivity of 1 [Oe]. The examiner cannot determine the size of the crystal grains, but given the identity in composition, coercivity, Bs and given the low magnetostriction constant due to adding the interstitially soluble nitrogen atom which suppresses crystal grain growth, the examiner has basis for shifting the burden to applicants to demonstrate that the crystal grains of Kobayashi et al. are greater than 50 nm. In re Fitzgerald 205 USPQ 594.

We point out that in a rejection under 35 U.S.C. § 103, it is basic that all elements recited in a claim must be considered and given effect in judging the patentability of that claim against the prior art. *See In re Geerdes,* 491 F.2d 1260, 1262-63, 180 USPQ 789, 791 (CCPA 1974). Manifestly, the examiner's statement of rejection fails to meet that basic

requirement for the presentation of a sustainable § 103 rejection.

The rejection, as stated, does not (1) comprehensively and fairly describe the teachings of each of the applied references as they may pertain to the subject matter at issue on a claim by claim basis; (2) set forth the differences between the claimed subject matter and what is taught by each of the applied references; and (3) fully explain why the teachings of either applied reference alone or in combination would have led one of ordinary skill in the art to the claimed subject matter not withstanding those differences.

In particular, we note that the examiner's reliance on an example from Table 3 of Kobayashi in the statement of rejection to ostensibly establish that Kobayashi teaches a film corresponding to appellants' film is misplaced. Unlike appellants' single layer film, that example, like the other examples for which film properties are displayed in Table 3, represents a multi-layer film that includes 19 films and intermediate layers as set forth at the bottom of column 7 of Kobayashi.

We are cognizant that Kobayashi also discloses single layer films may be formed of iron, an element soluble to iron, and further elements and displays several examples thereof, including magnetic and other properties, in Tables 1 and 2. However, none of those examples represent a single layer film made of the herein claimed composition and made so as to possess a coercivity not exceeding 2.5 Oe. Indeed, as developed in appellants' brief (pages 7-13), Kobayashi would have reasonably led one of ordinary skill in the art to employ a multi-layer film when attempting to obtain a film with lower coercivity rather than pursue such a property in a single layer film. See Kobayashi at column 3, lines 8-21, column 9, lines 22-32, and Tables 1-3.

Here, the examiner has not satisfactorily explained why one of ordinary skill in the art would have been led to select a composition corresponding to the claimed composition from the plethora of compositions that Kobayashi generically suggests for a single layer film and form that film in such a way as to necessarily have the herein claimed properties. Nor has the examiner adequately explained how Otomo together with

Kobayashi would have suggested appellants' film to one of ordinary skill in the art.

It is well settled that in order to establish a *prima facie* case of obviousness, "[b]oth the suggestion and the reasonable expectation of success must be found in the prior art and not in applicant's disclosure." *In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991), citing *In re Dow Chemical Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531(Fed. Cir. 1988). Thus, a *prima facie* case of obviousness is established by showing that some objective teaching or suggestion in the applied prior art taken as a whole and/or knowledge generally available to one of ordinary skill in the art would have led that person to the claimed invention, including each and every limitation of the claims, without recourse to the teachings in appellants' disclosure. *See generally In re Oetiker*, 977 F.2d 1443, 1447-48, 24 USPQ2d 1443, 1446-47 (Fed. Cir. 1992) (Nies, J., concurring). This showing can be established on similarity of product or of process between the claimed invention and the prior art. Here, the examiner has presented insufficient evidence or

scientific reasons so as to establish that one of ordinary skill in this art would have been led to make a single layer film having all of the compositional and physical attributes of appellants' film from the applied references' teachings.

Accordingly, it is manifest that the only direction to appellants' claimed invention as a whole on the record before us is supplied by appellants' own specification. *Vaeck, supra*.

CONCLUSION

The decision of the examiner to reject claims 1-6 and 11-19 under 35 U.S.C. § 103 as being unpatentable over Kobayashi and optionally Otomo is reversed.

REVERSED

TERRY J. OWENS Administrative Patent Judge	)
PETER F. KRATZ Administrative Patent Judge	) BOARD OF PATENT APPEALS AND INTERFERENCES
JEFFREY T. SMITH Administrative Patent Judge	)

PFK/sld

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APPEAL NO. - JUDGE KRATZ
APPLICATION NO.

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DECISION: **ED**

Prepared By:

DRAFT TYPED: 10 Jan 02

FINAL TYPED: